Risk Adjustment and Socioeconomic Status or Other Sociodemographic Factors

Expert Panel Meeting

January 15-16, 2014

NATIONAL QUALITY FORUM

Project Purpose, Scope, Timeline

Helen Burstin, MD, MPH, Sr Vice President

Suzanne Theberge, MPH, Project Manager

Karen Pace, PhD, Senior Director

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Purpose of Project

- Identify and examine the issues related to risk adjusting outcome and resource use performance measures for socioeconomic status (SES) or other sociodemographic factors such as race/ethnicity.
- Make recommendations regarding if, when, for what, and how outcome and resource use performance measures should be adjusted for SES or other sociodemographic factors. Make recommendations for NQF's endorsement criteria for outcome performance measures.
  - Should apply broadly to outcome performance measures (e.g., principles, criteria, types of analyses, best practices)

Scope

This project is focused on:

- Outcome performance measures
- Outcome performance measures considered for accountability applications
- Consideration of SES or other sociodemographic variables as factors for risk adjustment

It is not focused on:

- Specific performance measures (though some will be used for illustration)
- Adjustments for determining payment for services such as capitated payments
- Selecting a particular risk model or approach

Project Schedule

- In-person meeting: January 15-16, 2014
- Meeting Follow-up Call #1: February 10, 1:00-3:00pm ET
- Meeting Follow-up Call #2: February 18, 12:00-2:00pm ET
- NQF Member & Public Comment: February 24-March 25, 2014
- Expert Panel Post-Comment Call: April 9, 1:00-3:00pm ET
- CSAC Review: May 13, 2014
- NQF Board Review: June, 2014
- Expected completion: June 30, 2014

Setting the Stage

David Nerenz, PhD

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Goals for Meeting

- Objectively identify and examine the issues related to risk adjusting outcome performance measures for SES or other sociodemographic factors; and
- Develop draft recommendations related to if, when, for what, and how outcome performance measures should be adjusted for SES or other sociodemographic factors.
  - For example, principles, best practices, criteria and analyses to justify including or excluding SES or other sociodemographic factors
- Brief review of agenda
  - Day 1 – Examine and discuss issues
  - Day 2 – Identify and examine pros and cons of potential recommendations; draft propooed recommendations

Expectations for Expert Panel Discussions

- Openly share perspective, but suspend judgment
- Objectively examine issues
- Participate in discussions and recommendations
- Actively seek ways to achieve consensus
- Collegiality and respect for different opinions

Definitions

- **Health Disparity** – Healthy People 2020 defines a health disparity as "a particular type of health difference that is closely linked with social, economic, and/or environmental disadvantage. Health disparities adversely affect groups of people who have systematically experienced greater obstacles to health based on their racial or ethnic group; religion; socioeconomic status; gender; age; mental health; cognitive, sensory, or physical disability; sexual orientation or gender identity; geographic location; or other characteristics historically linked to discrimination or exclusion."

- **Healthcare disparity** – Differences in health care quality, access, and outcomes adversely affecting members of racial and ethnic minority groups and socially disadvantaged populations. (NQF Disparities Project)

Definitions
Outcome – the result of providing healthcare.

Quality outcomes include:

- **Health outcome** is the health status of a patient (or change in health status) resulting from healthcare—desirable or adverse.
- **In some situations, resource use may be considered a proxy** for a health state (e.g., hospitalization may represent deterioration in health status).
- **Intermediate clinical outcome** is a change in physiologic state that leads to a longer-term health outcome (e.g., hemoglobin, blood pressure).
- **Patient-reported outcome** is any report of the status of a patient's health condition that comes directly from the patient, without interpretation of the patient's response by a clinician or anyone else. The domains of PROs include health-related quality of life/functional status, symptom/symptom burden, experience with care (including engagement, activation), and health-related behaviors.[3]

Economic outcomes include the cost and resource use associated with providing healthcare services. (Although efficiency is considered one aspect of quality, cost and resource use alone without consideration of quality is not considered a quality performance measure.)

Definitions

- **Performance measure** – Numeric quantification of healthcare quality for a designated accountable entity such as hospital, health plan, nursing home, clinician, etc. (NQF measure testing report)

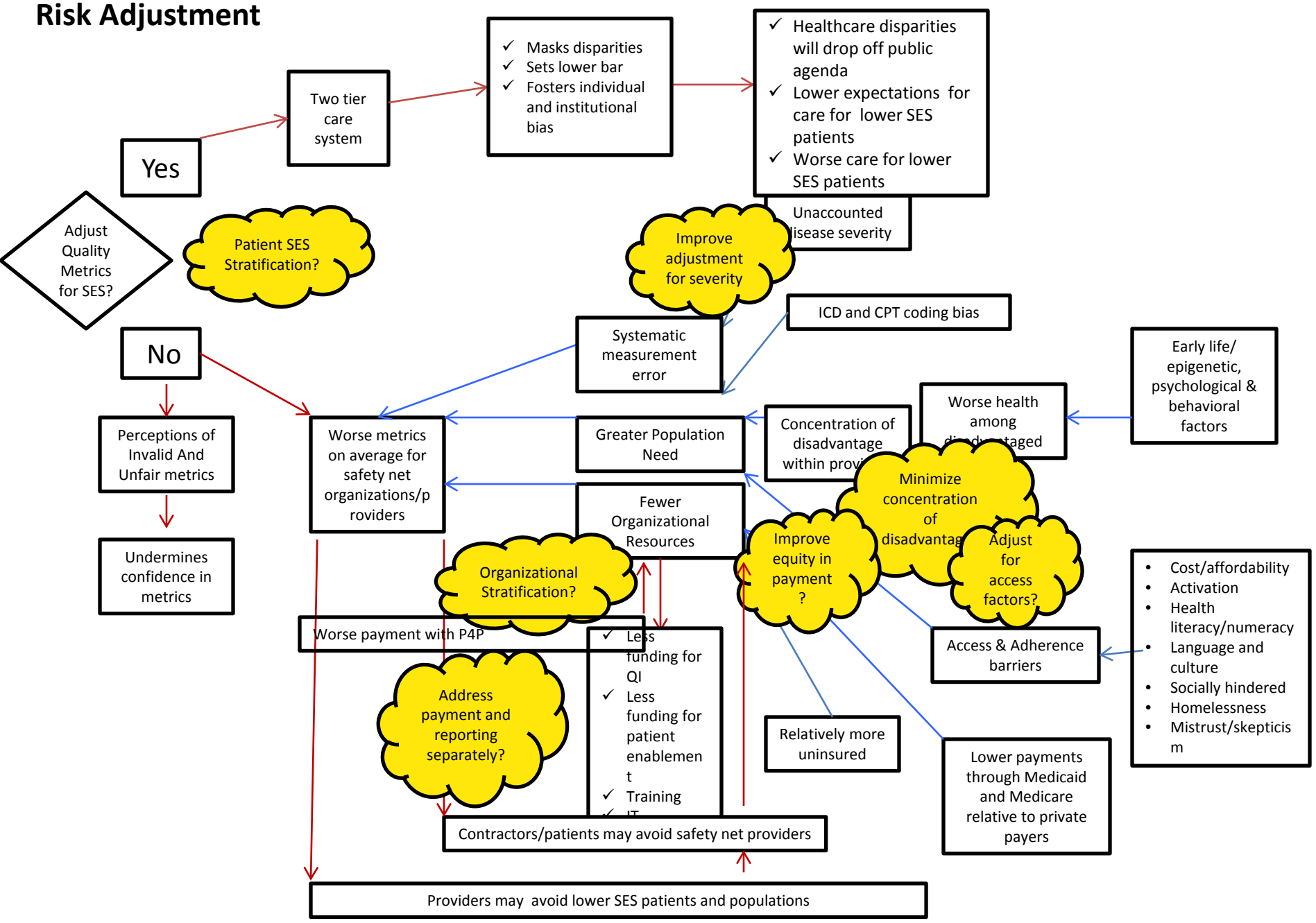
- **Risk Adjustment** – The process of controlling or accounting for patient-related factors before examining outcomes of care, regardless of context. (Iezzoni) (Generally, process performance measures are not risk-adjusted.)

Core Principles
as discussed on call 12/09/13

1. Outcomes may be influenced by patient health status/clinical and sociodemographic factors (patient and community) in addition to healthcare services, treatments and interventions.
2. Outcome performance measures used in accountability applications need to be adjusted for differences in case mix to avoid incorrect inferences about performance. (Note that this principle does not identify which risk factors are appropriate and a how model is applied.)
3. Disparities in health and healthcare should be identified and reduced.
4. Performance measurement should not increase disparities in health and healthcare.
5. Risk adjustment is constrained by data limitations and data collection burden.

Risks related to SES Risk Adjustment

Potential solutions



Issue to Address

- Relationship between SES and likelihood of readmission
  - Low-income patients more likely to be readmitted

TABLE 4–10

Readmission penalties are higher for hospitals with more low-income patients, 2008–2010

SSI decile	Share of Medicare patients on SSI	Average readmission penalty in 2013	Share of hospitals at 1 percent penalty cap	Share of hospitals with no penalty
1	0–3%	0.21%	5%	41%
2	3–4	0.23	5	37
3	4–5	0.22	6	43
4	5–6	0.26	7	39
5	6–7	0.29	7	32
6	7–9	0.30	8	27
7	9–10	0.36	10	21
8	10–13	0.40	14	18
9	13–18	0.39	17	21
10	18–74	0.45	20	14
Average	9	0.31	10	29

Note: SSI (Supplemental Security Income). Penalty is calculated as a percentage of base operating payments and thus does not include outlier payments, indirect medical education payments, disproportionate share hospital payments, and special rural hospital specific payments. Penalties are computed as a share of base operating payments.

Source: MedPAC analysis of 2010 Medicare claims files for 3,006 inpatient prospective payment system hospitals with 1,000 discharges in each year between 2008 and 2010 and SSI files from CMS.

Proposed Solution

- Stratified reporting and application of penalty
  - Stratifying variable – percent of Medicare patients qualifying for Supplemental Security Income (SSI)
  - Hospitals grouped into deciles

TABLE 4–11 **Comparing hospitals with their peers makes penalties similar across hospitals serving patients with different income levels, 2010**

SSI decile	Share of Medicare patients on SSI	Current penalty using 3 conditions	Current penalty after mandated expansion to 7 conditions	Simulation using peer group all-condition penalty with a target equal to 40th percentile
1	0–3%	0.21%		0.49%
2	3–4	0.23		0.47
3	4–5	0.22		0.47
4	5–6	0.26	Penalty	0.48
5	6–7	0.29	will increase	0.47
6	7–9	0.30	above	0.47
7	9–10	0.36	2013 levels	0.49
8	10–13	0.40		0.46
9	13–18	0.39		0.49
10	18–74	0.45		0.54
Average		0.31	Over 0.31	0.48

Note: SSI (Supplemental Security Income). The magnitude of the increase in the penalty over the penalty with three conditions will depend on the number of conditions added to the penalty; under current law the number of conditions will at least double. The exact levels of penalties will not be known until CMS adopts risk adjusters for these conditions. All-condition readmission measure is based on 3M potentially preventable readmissions. Penalty is calculated as a percentage of base operating payments and thus does not include outlier payments, indirect medical education payments, disproportionate share hospital payments, and special rural hospital specific payments.

Source: MedPAC analysis of 2010 Medicare claims files and SSI files from CMS.

Simulation of 10% readmission reduction

TABLE 4–12

Setting a fixed readmission target for SSI peer groups based on 40th percentile readmission rate for an all-condition readmission measure, 2010

SSI decile ranked by share of Medicare patients on SSI	Current penalty using three conditions, assuming no improvement in readmissions	Simulation of 10 percent reduction in readmission rates by all hospitals			Readmission rate target: 40th percentile of readmission distribution for peer group
		Current penalty	Peer group all-condition penalty	Readmission reduction savings	
0–3%	0.21%	0.21%	0.22%	1.01%	11.3%
3–4	0.23	0.22	0.20	1.04	11.6
4–5	0.22	0.22	0.17	1.05	11.7
5–6	0.26	0.26	0.19	1.10	12.0
6–7	0.29	0.28	0.19	1.09	12.0
7–9	0.30	0.30	0.20	1.12	12.3
9–10	0.36	0.35	0.19	1.16	12.5
10–13	0.40	0.39	0.15	1.19	13.2
13–18	0.39	0.39	0.27	1.29	13.2
18–74	0.45	0.44	0.34	1.48	13.6
Average	0.31	0.30	0.21	1.15	12.1

Note: SSI (Supplemental Security Income). All-condition readmission measure is based on 3M potentially preventable readmissions. Penalty is calculated as a percentage of base operating payments and thus does not include outlier payments, indirect medical education payment, disproportionate share payments, and special rural hospital specific payments.

Source: MedPAC analysis of 2010 Medicare claims files and SSI files from CMS.

Observations

- No recommendation about stratified reporting of rates within hospitals
  - SSI vs. no SSI
  - Other demographic or SES variables
- "Percent SSI deciles" is one of many options for SES stratification
- MedPAC recommendations are recommendations only – not binding on Congress or CMS
- Problem already addressed by DSH payments?

> There is a concern that hospitals serving large shares of poor patients tend to have higher readmission rates and that hospitals serving these patients will be more likely to pay readmission penalties (Joynt and Jha 2013a, Joynt and Jha 2013b, Lindenauer et al. 2013). This concern is similar to the concern that poor patients have higher costs of care; the higher cost of serving poor patients is addressed with inpatient DSH payments. In contrast, there is no income adjustment with respect to computing readmission rates or readmission penalties.

Expert Panel Introductions, Disclosure of Interests, and Perspective on Topic

Context

Helen Burstin, MD, MPH, Sr Vice President

Karen Pace, PhD, Senior Director

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NQF Endorsement

- Suitable for BOTH performance improvement and accountability applications
  - **Accountability Applications** – Use of performance results about identifiable, accountable entities to make judgments and decisions as a consequence of performance, such as reward, recognition, punishment, payment, or selection (e.g., public reporting, accreditation, licensure, professional certification, health information technology incentives, performance-based payment, network inclusion/exclusion).
- Endorsing the performance measure vs. implementation and reporting methods
- NQF endorsement vs. MAP recommendation

Uses of Endorsed Performance Measures

- Public reporting
  - Medicare Compare Programs
  - Hospitals, nursing homes, home health, dialysis, health and drug plans
- Examples of Federal Pay-for-Performance Programs
  - Hospital readmission reduction program
  - Hospital value-based purchasing
  - Medicare shared savings program

NQF Evaluation Criteria

2. Scientific Acceptability of Measure Properties

2b. Validity (and threats to validity)

2b1. Specifications consistent with evidence

2b2. Validity testing—data elements or measure score

2b3. Justification of exclusions (also relates to evidence)

2b4. Risk adjustment for outcomes/ resource use

2b5. Identification of significant/meaningful differences in performance

2b6. Comparability of data sources/methods

2b7. Missing data - eMeasures, composites, and PRO-PMs

2b4. For outcome measures and other measures when indicated (e.g., resource use):

an evidence-based risk-adjustment strategy (e.g., risk models, risk stratification) is specified; is based on patient factors that influence the measured outcome (but not factors related to disparities in care or the quality of care) and are present at start of care;[14,15] and has demonstrated adequate discrimination and calibration

OR rationale/data support no risk adjustment/ stratification.

14. Risk factors that influence outcomes should not be specified as exclusions.

15. Risk models should not obscure disparities in care for populations by including factors that are associated with differences/inequalities in care, such as race, socioeconomic status, or gender (e.g., poorer treatment outcomes of African American men with prostate cancer or inequalities in treatment for CVD risk factors between men and women). It is preferable to stratify measures by race and socioeconomic status rather than to adjust out the differences.

Adjustment for performance measurement vs. determining payment for providing service

- Adjustments for casemix are also used in determining payment for providing service (e.g., capitation)
- Examples
  - Hospital payment adjustment for disproportionate share (DSH) of certain low income patients (see overview of Medicare hospital payment); and
  - Inclusion of Medicaid status in case-mix adjustment for Medicare Advantage plans (see overview of Medicare Advantage payment)

Adjustment for performance measurement vs. determining payment for providing service

- Similar issues – sociodemographic factors → affect severity or needs → affect cost of providing care
- Related but out of scope for this project
- Some potential implications
  - If patients with certain sociodemographic characteristics have greater needs, does payment for their care reflect the higher cost of caring for them?
  - If payment for services is increased to account for the higher cost of caring for patients with certain sociodemographic factors, should equal outcomes be expected?

Panel: Case Studies
10:55am

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SES and risk-adjustment of hospital readmission measures

Susannah Bernheim, MD, MHS
National Quality Forum
January 15, 2014

CORE
CENTER FOR OUTCOMES RESEARCH AND EVALUATION

YALE NEW HAVEN HEALTH

Risk-adjustment models for measuring quality

- Not aiming to maximize patient-level prediction
- Conceptually, patient outcomes the result of baseline status, quality of care and random variation
- Models account for baseline status to illuminate variation in quality

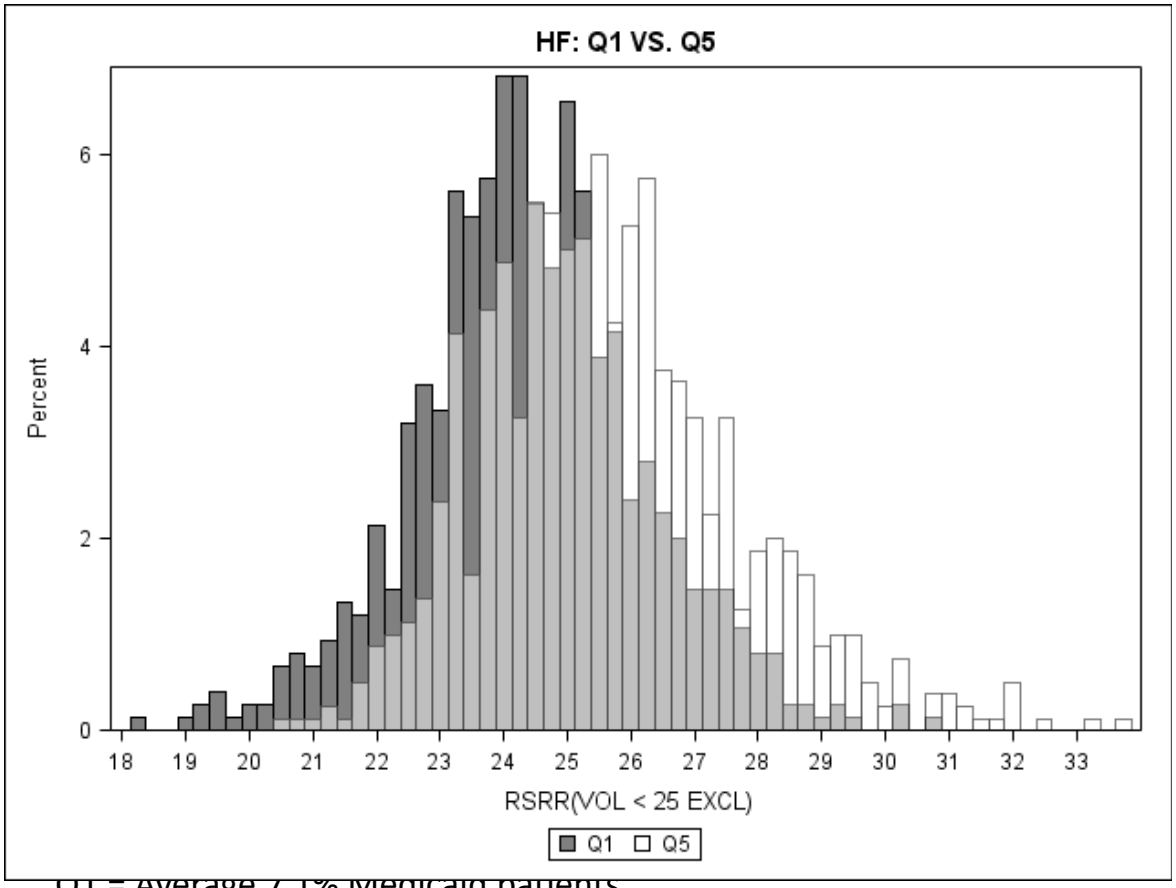
Modelling

- Measures are relative measures – comparison to what is *expected* for average hospital with same case mix
- Hierarchical logistic regression models produce predicted/expected – analogous to observed/expected
- Risk-adjustment used to set the *expected*

Risk-adjustment standards

- Factors present at start of measurement period
- Do not include factors clearly reflective of or mediated largely by quality, e.g. complications
- SES may work through many pathways: baseline health status, quality, other

Distribution of heart failure RSRR for hospitals with highest percent Medicaid patients compared with fewest



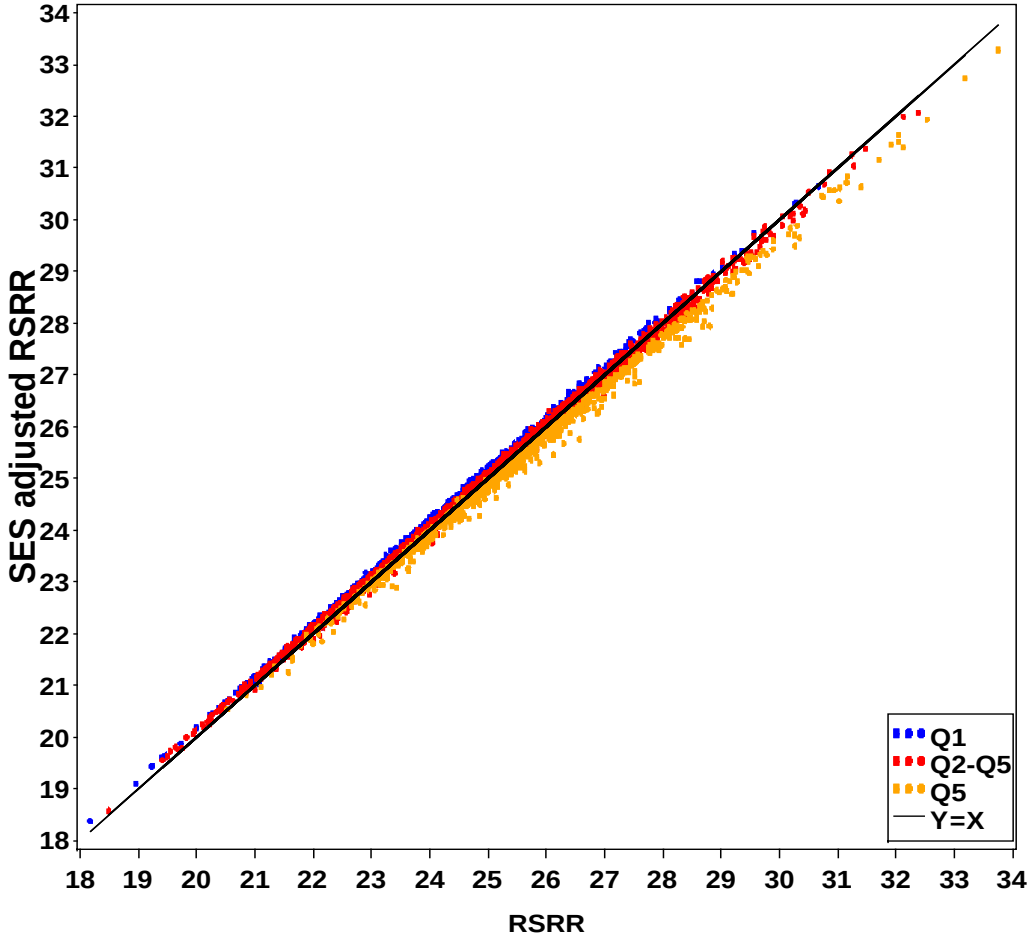
Q1 = Average 7.1% Medicaid patients

Q5 = Average 55.2% Medicaid patients

Q1 Hospitals = Average 7.1% Medicaid patients

Q5 Hospitals = Average 55.2% Medicaid patients

Comparison of hospital heart failure RSRR with and without risk adjustment for SES (Medicaid-eligibility)



Hospital influence on patient outcomes

- In hospital-wide readmission measure assessed performance of hospitals with large proportion of Medicaid patients
- Assessed performance for Medicare-only patients
- High Medicaid hospitals have higher readmission rates on Medicare-only patients

Stratification

- Different possible approaches
  - If measure is calculated within different strata no comparability across strata
  - If measure calculated with full set of hospital, measure not truly stratified, but penalties could be applied based on ranking within strata

Conclusions

- Patient SES not determinative of hospital performance – wide range of readmission rates
- How SES is defined changes what hospitals are identified as “low SES”
- Risk-adjustment for SES would not change hospitals’ performance substantially – regardless of SES variable used
- Hospital influence as well as patient influence on outcomes

Case Study: Payment-Standardized Medicare Spending Per Beneficiary (MSPB) Measure (#2158)

NQF SES Risk Adjustment Meeting
Jan 15-16, 2014

ACUMEN

CMS CENTERS for MEDICARE & MEDICAID SERVICES

MSPB Measure Overview

- **Measures Total Medicare Allowed Cost for Hospitalization Episodes**
  - Cost measure for hospitals
  - An MSPB episode includes all Medicare Part A and B claims (not Part D) between 3 days prior to index admission date to 30 days after the hospital discharge date
  - Includes all conditions
  - Applies to Medicare Fee-For-Service (FFS) beneficiaries discharged during the period of performance from hospitals paid under the Inpatient Prospective Payment System (IPPS) and located in the 50 U.S. States or D.C.
  - Payment standardization and risk adjustment allow for a comparison across all hospitals in the country
  - MSPB Amount is the average payment-standardized, risk-adjusted spending across all of a hospital's eligible MSPB episodes
  - MSPB Measure is the ratio of the MSPB Amount for that hospital divided by the median MSPB Amount across all hospitals

MSPB Risk Adjustment Model

- **The risk adjustment for MSPB uses an augmented HCC model and includes the following variables:**
  - Demographic variables (age)
  - HCCs and interactions
  - ESRD
  - Disability status
  - MS-DRG
  - Long-term institutionalization indicator

- **Medicaid Status was NOT included to be consistent with NQF policy on SES risk adjusters, but Acumen tested the effects of including it for the NQF endorsement process**

Medicaid Status: Episode level

	Medicaid	Non-Medicaid	% Difference
# of episodes	1,812,043	3,863,764	
Avg. Observed Cost	$18,949	$18,585	2.0%
Avg. Risk-Adjusted Cost	$19,096	$18,518	3.1%

- Medicare beneficiaries with Medicaid have higher MSPB Amounts than those without Medicaid

Regression Estimate for Medicaid Status:	
Coefficient	$992.55
Standard error	14.81
P-Value	0.00
Coefficient expressed as % of average observed cost	5.02%

- When included in the regression, Medicaid status indicator has a statistically significant positive coefficient

**Uses Jan 1, 2012 – Dec 31, 2012 Period-of-Performance MSPB data*

Medicaid Status: Episode level

Change in MSPB Measure from including Medicaid status as risk adjuster	# of Hospitals	% of Hospitals
Down by 4 decile	1	0.0%
Down by 3 decile	0	0.0%
Down by 2 decile	1	0.0%
Down by 1 decile	263	7.8%
No Change	2,849	84.3%
Up by 1 decile	261	7.7%
Up by 2 decile	4	0.1%
Total	**3,379**	**100.0%**

- If an indicator for Medicaid status were included in the risk adjustment model, 84% of hospitals would not change decile

Model specification	R-squared
Excluding Medicaid Status	0.4468
Including Medicaid Status	0.4473

- Controlling for Medicaid status leads to a very small improvement (0.0005) in the R-squared value of the regression

**Uses Jan 1, 2012 – Dec 31, 2012 Period-of-Performance MSPB data*

Conclusions

- Including Medicaid status in a risk model does have a statistically significant effect on predicted episode spending (~5% of average episode cost). The change in R-squared is negligible.
- Inclusion of Medicaid status has very little effect on final hospital rankings (84.3% of hospitals stay in the same decile, and 99.8% of hospitals experience a change of 1 decile or less).
- Medicaid status may have a more limited effect for MSPB than for other cost measures such as total per capita cost, because MSPB is conditional on being hospitalized, and controls for initial MS-DRG.

Panel: Relationship of sociodemographic variables to other risk factors
11:30am

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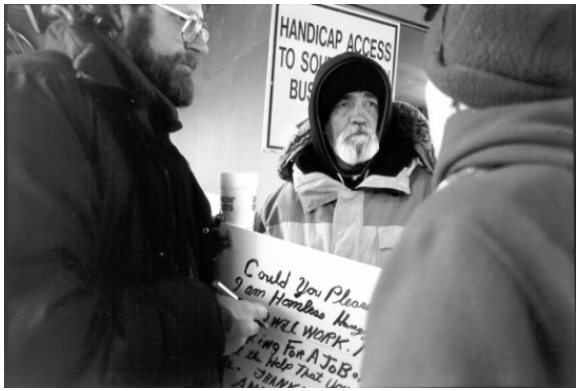
RISK ADJUSTMENT AND SOCIOECONOMIC STATUS: THE CASE OF BEING HOMELESS

Monica Bharel, MD, MPH

January 2014

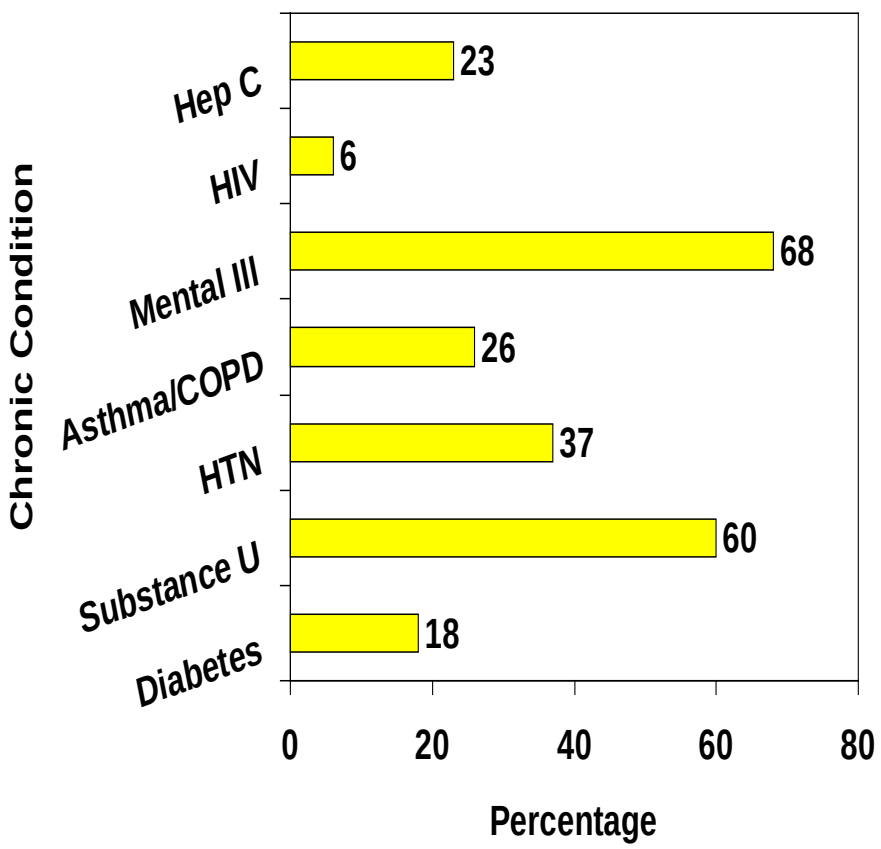
Homeless Health Status

- Abject Poverty
- Lack of consistent shelter
- Violence and trauma
- Absence of healthy food options



- Increased mortality
- Increased chronic medical illnesses
- Increased mental illness and substance use
- Multitude of barriers to medical care
- Fragmented and crisis oriented medical care
- Medical follow up is greatly lacking
- No sufficient place to recuperate

Higher Morbidity Among Homeless Individuals



Diagnostic and Other Characteristics	Statewide	Homeless
Number	426,768	3,998
DxCG Score	1.5	3.4
Both Mental Health & Substance Use	10%	51%
Asthma or COPD	6%	24%
Diabetes	6%	15%
Average Annual Cost	$6,679	$20,925

Bharel et al, AJPH 2013

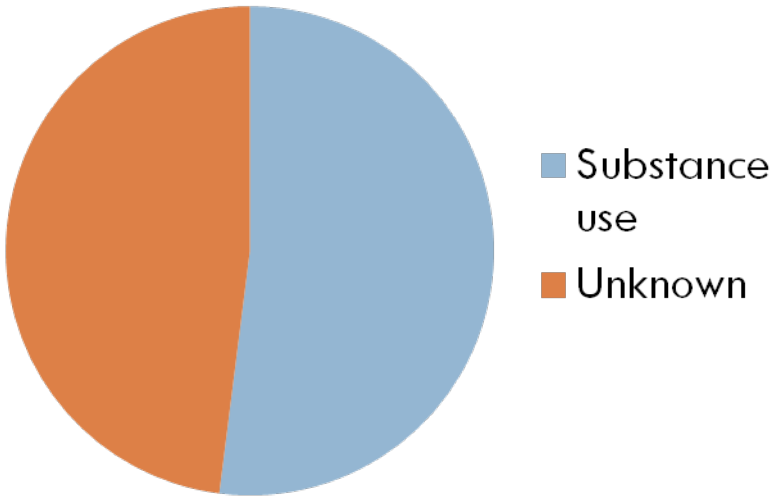
Higher Mortality among Homeless Individuals

- Cohort study of >28,000 patients seen by Boston Health Care for the Homeless from 2003-2005
- Average age at death: **51**
- Leading causes of death:
  - 25-44: Drug overdose (**9x** higher)
  - 45-64: Cancer, closely followed by heart disease
  - 65-84: Cancer, closely followed by heart disease

(Baggett, JAMA IM Feb. 2013)

Is Being Homeless Independently Associated with Death?

Etiology of Premature Mortality



Unexplained mortality gap of 48%

Baggett et al, manuscript in preparation

Risk of Death

- 8,769 homeless men in Toronto
- Risk of death during months in homeless shelter increased with hazard ratio **1.85** (95% CI 1.27-2.67)

Hwang, CJPH 2002

Is Being Homeless Independently Associated with Health Outcomes?

- Cost data is suggestive: shows a **$210** increase monthly cost to medical care for MATCHED DxCG scores. (Bharel, et al manuscript in preparation)
- Morbidity and mortality data is suggestive
- Clinical experience is suggestive
- Direct causal data is challenging to obtain and does not currently exist

Considering Limited English Proficiency (LEP) in Risk Adjustment

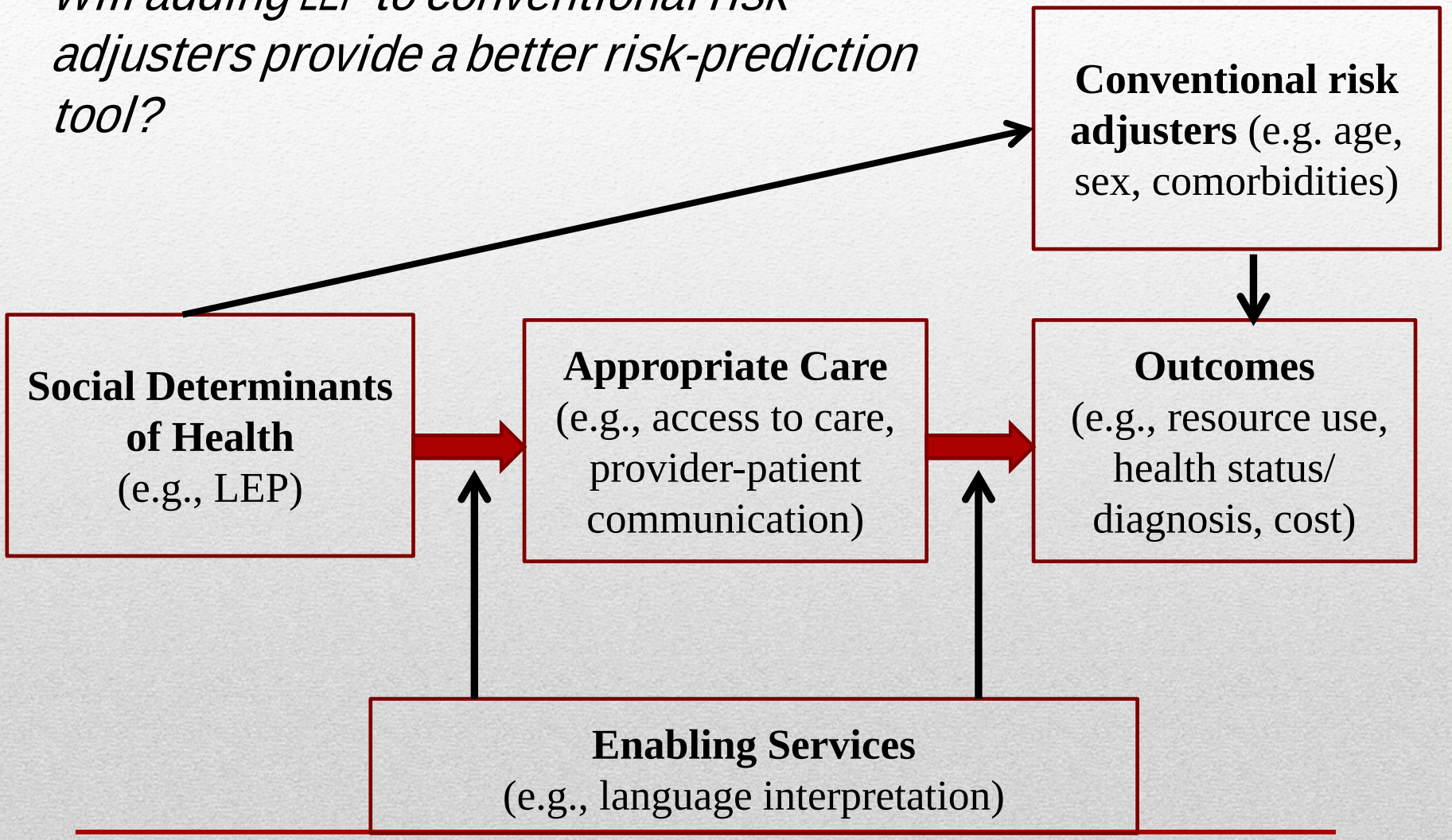
Thu Quach, PhD, Asian Health Services
Ninez Ponce, PhD, UCLA

NQF Risk Adjustment and SES Project

January 15, 2014

Conceptual Framework:

Will adding LEP to conventional risk adjusters provide a better risk-prediction tool?



Does LEP data exist?

Uniform Data System (UDS)

- Mandatory annual reporting by health center programs which include Program Grantees and "Look-Alikes"
- Data includes: patient demographics, services provided, staffing, clinical indicators, utilization rates, costs, and revenues
- Includes information on "Patient By Language" where one category is *Patients Best Served in a Language other than English*
- Data should be available at patient-level

Pilot Project - LEP in risk adjustment

Study Population

- Subset of Asian Health Services patients in these programs: Medicaid Managed Care, Healthy Families, etc…
- ~50% of entire patient population included only; does not include uninsured, Medicare and other non-Managed Care Medicaid programs
- 16,909 members (member years) enrolled 6+ months (per year) from 2011-2012
- 89% LEP

Analysis

- Used Chronic Illness and Disability Payment System (CDPS); analyzed by Dr. Todd Gilmer, CDPS co-developer
- Data: demographics, enrollment, diagnosis and pharmacy data
- Results compared to national benchmarks
- CDPS scores take into account age, gender, and diagnoses

Preliminary Results

STRATIFIED ANALYSIS		
Aid Category	**LEP risk score (n=14,982)**	**Non-LEP risk score (n=1,927)**
Adult (n=5,830)	0.87	0.94
Children (n=7,761)	0.76	0.96
Disabled (n=1,458)	1.05	1.11
Elderly (1,860)	1.21	1.38

LEP AS RISK-ADJUSTER		
Aid Category	**LEP vs. non-LEP risk score**	**P-value**
Adult (n=5,830)	0.824	0.037
Children (n=7,761)	0.763	0.001
Disabled (n=1,458)	<1.00	>0.05
Elderly (1,860)	<1.00	>0.05
Combined*	**0.848**	**<0.001**

*Model with LEP R^2=0.0267 vs. model w/out LEP R^2=0.0224

Considerations

- Data not weighted by LEP; too small sample size to estimate specific weights
- Outcomes based on diagnoses data – consider that LEP populations tend to face issues of access and adequate care → under-utilization and under-diagnosis
- Selection bias– who are the non-LEP who are patients at this health center?
- Data limitations: lack of data on all patients and lack of hospital & mental health whereas benchmark population has these data
- Stratification facilitates comparison of risk score by LEP; LEP as risk adjuster suggests LEP has significant predictive value in including as risk adjuster
- IMPORTANT: Models did not account for enabling services (i.e., language interpretation) occurring at health center and since unmeasured, may downward bias the LEP results

Risk Adjustment and SES Notes

Tia Goss Sawhney, DrPH, FSA, MAAA

National Quality Forum

January 15, 2014

Risks, outcomes, and adjustments need to be in synch with each other

- Risks:
  - Incidence vs. Prognosis
- Outcomes:
  - Total HC Cost vs. Episode (or Event) outcome
- “Traditional risk adjustment”
  - Incidence risk limited to age and sex for those without history
- Takeaway:
  - Different RA models are necessary

Research Results for Total Costs, Prospectively Risk Adjusted

- Traditional risk adjustment: age, sex, and one year of diagnostic history
- Income: 5 category variable with “middle income” as 200-400% of FPL (MEPS categories)
- Marginal impact of income:
  - Lowest income category perhaps 45% more costly than middle income
  - Highest income (400%+ FPL) about same as middle income
  - Remember that health is just one variable driving cost
- MEPS not ideal data source
  - Income has is not otherwise linked to cost data in public data sets
  - Those working with identified health insurance data claim to have similar findings using neighborhood characteristics

[1] Sawhney, T.G. (2010). *Health Insurance Risk Adjustment: The Income Effect* . Dissertation paper, available at www.**soa**.org/files/sections/health-dissertation-**sawhney**.pdf (Appendix to *Controlling Indirect Selection under Healthcare Reform*).

Marginal differences in R^2 can be associated with large differences in average costs

- Total healthcare cost distributions
  - Density at zero, extreme outliers, heteroskedastic
  - High variance
- Research with real and modeled data
  - SES factors do not reduce variance
  - Disadvantaged populations have higher variance
  - Example: 20% total HC cost differential, R^2 improvement < 0.001 (t-value is still highly significant)[1]
- Takeaway

  Unless the added RA variable reduces variance the impact is likely to be negligible

[1] Sawhney, T.G. (2009). *Looking Beyond R^2*. Working paper, available upon request (tia.sawhney@illinois.gov).

SES Variable Selection

- Practical considerations
  - Available for most patients[1]
  - Generally considered reliable[1]
  - Not susceptible to gaming[1]
  - Stable over time
- Takeaways
  - “Homeless” is a challenging variable
  - Income (or rather categories thereof) is a good variable
  - Neighborhood income may be more easily obtained

[1] Dunn, D. L., Rosenblatt, A., Taira, D. A., Latimar, E., Bertko, J., Stoiber, T., et al. (1996). *A Comparative Analysis of Methods of Health Risk Assessment, SOA Monograph M-HB96-1. Schaumberg, IL:* Society of Actuaries.

Smoking Status: Outcome or Sociodemographic Variable?

Scott F. Davies, M.D.

Presented by
Nancy Garrett, Ph.D.

Hennepin County Medical Center

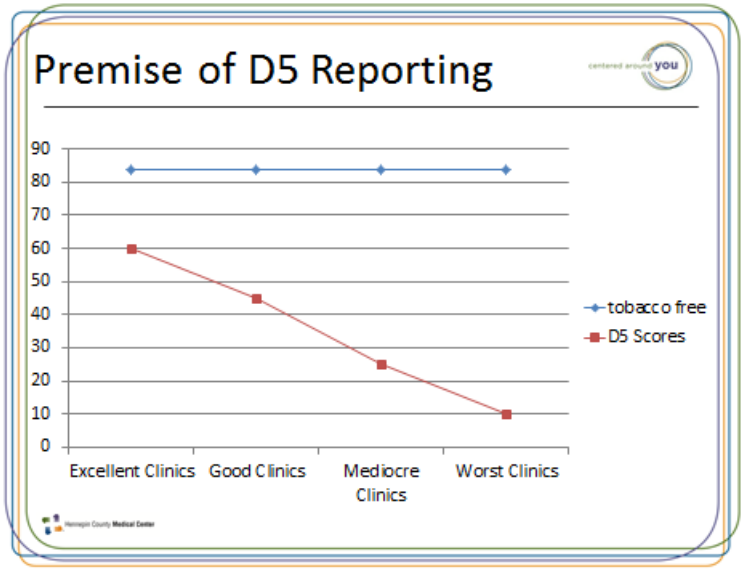
"D5" components – Ambulatory diabetes measure used in Minnesota

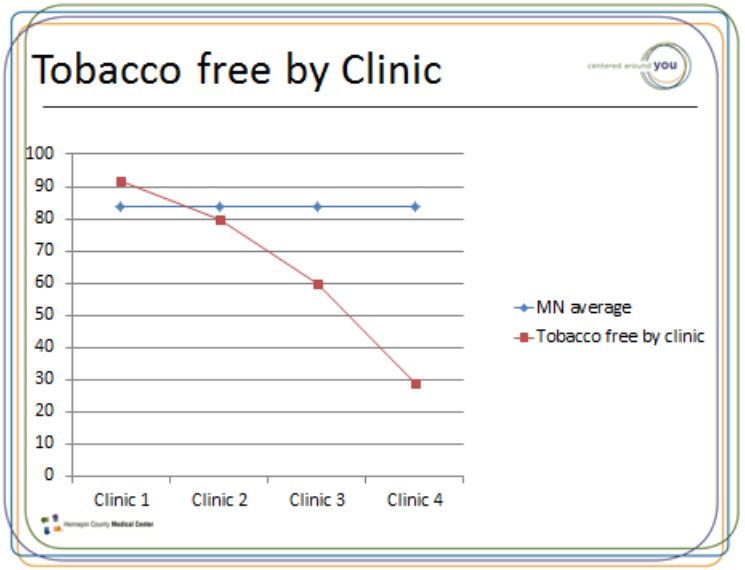
centered around you

- Hypertension (< 140/90)
- LDL (<100)
- HgA1C level (<8%)
- ASA use (unless contraindication)
- Tobacco free – self reported

Tobacco free is one component and sets ceiling on results - maximum score is 84 if 16% of patients smoke (average value for diabetics in MN in all reporting clinics)

D5 scores and smoking rates





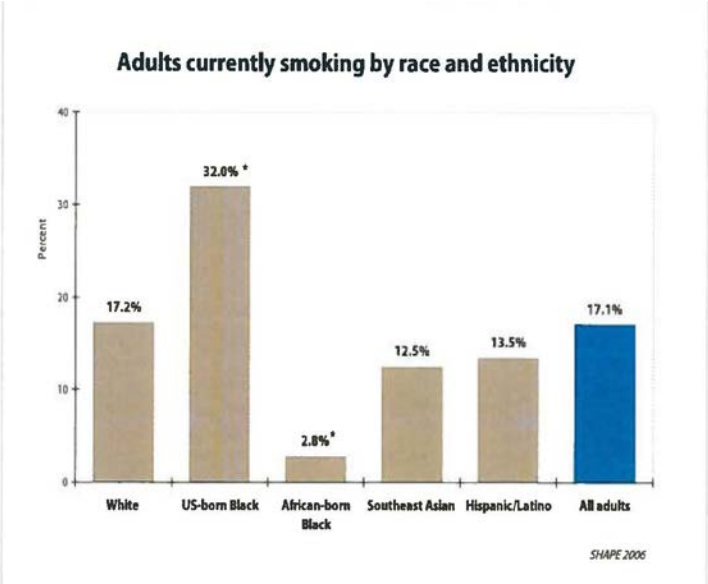
- Smoking rates vary widely across clinics and are stubbornly resistant to change – especially from interventions at the clinic or provider level (the best interventions show 3% decline per year)

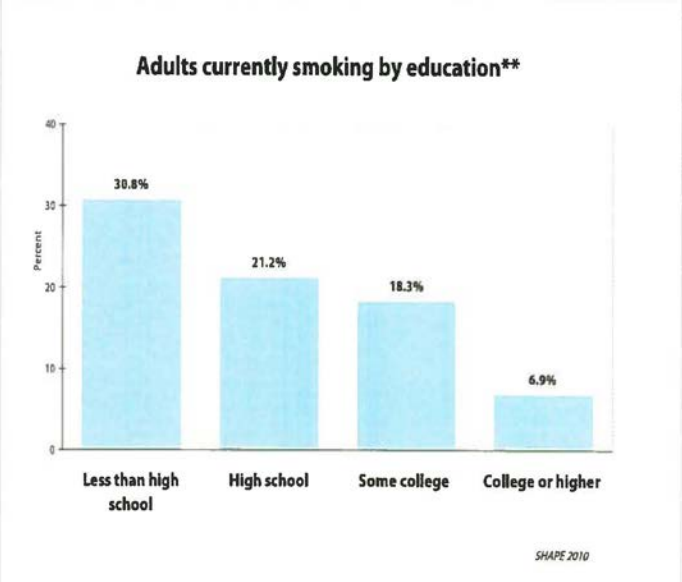
Impact of Smoking Cessation Efforts on D5

centered around you

- Higher smoking rate = more quitters (over many years)
- Small impact on D5 score – short term opportunity overestimated by research results
- Most future improvement will come from environmental efforts - already very robust in MN
- Motivating individuals toward eventual smoking cessation is vital – but little difference between clinics
- Maybe the remainder of MN smokers are tougher?

Smoking rates and Sociodemographics





- Demographics heavily influence smoking rates
- The same demographics that affect smoking also affect other components of the D5

HCMC Analysis of D5 scores

centered around you

- Factors Improving D5 score
  - Older Age
  - Diagnosis of CAD
  - Primary Language other than English
- Factors Worsening D5 score
  - Younger Age
  - African American versus white (associated with other factors including more difficult HT, lower SES, discontinuous or no health insurance, lower education)
  - Active Substance Abuse
  - Psychiatric Illness

Social Determinant Findings for Hennepin Health Population

LSO Measure	High	Medium	Low
HCH LSO HML FOOD	79.6%	14.8%	5.6%
HCH LSO HML SOCIAL SUPPORT	74.6%	13.4%	11.9%
HCH LSO HML WORK	59.0%	24.5%	16.4%
HCH LSO HML MEDICATIONS	55.8%	33.1%	10.9%
HCH LSO HML LEARNING	55.0%	0.0%	44.8%
HCH LSO HML HOUSING	45.9%	13.7%	40.3%
HCH LSO HML FINANCIAL	44.7%	0.0%	55.3%
HCH LSO HML TOBACCO	43.8%	9.8%	46.2%
HCH LSO HML DEPRESSION	42.3%	24.9%	32.7%
HCH LSO HML READY TO CHANGE	37.7%	52.6%	9.7%
HCH LSO HML ALCOHOL	37.6%	14.8%	47.4%
HCH LSO HML DENTAL	33.7%	27.2%	39.0%
HCH LSO HML ACTIVITY	31.3%	34.9%	33.7%
HCH LSO HML SAFETY	23.3%	0.0%	76.6%
HCH LSO HML TRANSPORTATION	20.0%	43.6%	36.2%
HCH LSO HML DRUGS	11.1%	0.0%	88.6%
HCH LSO HML LEGAL	11.1%	0.0%	88.7%
HCH LSO HML PHONE	3.6%	14.8%	81.2%

Overall Clinical Data Considerations in Utilizing Socioeconomic Variables in Risk Adjustment

- Why is link between clinical data and socioeconomic variables for risk adjustment critical
  - These classification systems will be used either directly or indirectly for payment
  - Classification systems that use detailed clinical data will rely less on socioeconomic variables thus not giving inappropriate pass to safety net institutions.
- Suggestion 1: Specify the health care encounter in question. E.g. readmissions different from hospital complications and dual eligibles capitation.
- #2: Clinical detail/Detailed severity adjustment as captured in traditional claims data critical for any classification system trying to capture socioeconomic disparities.
- #3: Have a national/ state strategy stratifying decisions on which additional clinical variables to incorporate by administrative complexity (e.g. health status vs homelessness vs patient confidence).

- DISCLOSURE: AM DEVELOPER OF CLASSIFICATION SYSTEMS SOME OF WHICH ARE PUBLIC DOMAIN AND OTHERS PROPRIETARY.

Overall Clinical Considerations

- It is important to incorporate clinical aspects into the risk adjustment system that identify individuals who are most likely suffer from socioeconomic disparities. Such an approach will often identify individuals at higher severity of illness which will lead to higher payment. Higher payment, in turn, will minimize adverse risk selection on the part of providers
- One should in a rules based or categorical manner (similar to DRGs) focus as much as possible on those clinical variables that have as little clinical elasticity as possible – thus minimizing gaming.
- Timing (irrelevant for most health care encounters but e.g. readmissions measured at 2 vs 4 wks) should NOT impact the classification. Results will be different with different timing but the clinical classification should be the same

Chronic illnesses not only need to be stratified by severity of illness but there should be clinical distinctions that specify the clinical detail that is available. For example, a patient with cerebral palsy needs to be stratified by severity of illness, but if the individual is in foster care, he or she should be identified in a separate risk category. Without this detailed approach to risk categorization, it is inevitable that managed care organizations and providers in general will assiduously pursue adverse risk selection—in other words, create incentives to provide treatment for individuals who are least likely to generate high medical expenses and to limit services to high-utilization populations.

Predicted Paymnt Wts by Severity for Pats with DM, Hrt Failure (CHF) and/or Chronic Lung Disease(COPD). Practical Meaning: Critical to account for Socioeconomic disparities due to Clinical Diffs before using socio vrbles.

	Severity Level					
CRG	**1**	**2**	**3**	**4**	**5**	**6**
DM	**0.5953**	**0.7797**	**0.9246**	**1.3985**		
CHF	**0.8950**	**0.9782**	**1.1783**	**1.7863**		
COPD	**0.8426**	**1.0144**	**1.3077**	**2.2961**		
COPD & DM	**0.9925**	**1.1082**	**1.4112**	**1.7560**	**2.2504**	**3.3735**
DM & CHF	**1.0632**	**1.2664**	**1.6494**	**2.0645**	**2.6528**	**3.6650**
COPD & CHF	**1.0956**	**1.4792**	**1.7433**	**2.2875**	**2.8244**	**3.8638**
DM & COPD & CHF	**1.4588**	**2.1968**	**2.5539**	**3.2849**	**4.2358**	**5.7845**

There are three different types of clinical data that can be incorporated into risk adjustment (again one needs to specify the type of health care encounter one is interested in)

- Data that is readily available today – ICD-9-CM; CPT; body mass index, foster care: ICD-9-CM codes today.
- Data that is available for some individuals but often not reliably collected. For example, provider derived health status (available for certain PAC PPS') and homelessness (some states are beginning to collect).
- Data that is not generally available today but will be available in the next three to five years. Most notably patient derived health status, incarceration, patient derived engagement/ activation/ empowerment and certain but not many laboratory or radiologic findings

Payment Considerations

- There is a tension between being fair to safety net institutions and giving a pass to institutions taking on individuals suffering from socioeconomic disparities.
- Identify best performing (e.g. top quartile) providers for payment/outcome variable in question using as clinically detailed methodology as potentially available
- Financial penalties should be rate based and not applied on an individual case-by-case basis
- The best performer still gains if they become better
- Fitting penalties to a pre-determined target or poorly structured goal (a common payer strategy) can lead to a large payment reduction compared to a modest observed performance cost

- Public comment: 12:15pm – 12:30pm
- Lunch break: 12:30pm – 1:00pm

Panel: Impact of including sociodemogrpahic factors in risk models 1:00pm

NATIONAL QUALITY FORUM

AAMC
Tomorrow's Doctors, Tomorrow's Cures®

Implications of the Risk Adjustment Approach under the Hospital Readmission Reduction Program

Learn
Serve
Lead

Risk Adjustment & SES Meeting
National Quality Forum

Atul Grover, M.D., Ph.D.
Chief Public Policy Officer, AAMC
January 15, 2014

Association of
American Medical Colleges

References

- The Medicare Hospital Readmissions Reduction Program: Potential Unintended Consequences for Hospitals Serving Vulnerable Populations

  Qian Gu, Lane Koenig, Jennifer Faerberg, Caroline Rossi Steinberg, Christopher Vaz, Mary P. Wheatley

  Forthcoming in ***Health Services Research***
  Disclosures: Funded by the American Hospital Association and AAMC

AAMC

Key Findings of Gu et al.

- Dual eligibles are more likely to be readmitted to a hospital within 30-days of discharge than non-dual patients, even after adjusting for age, sex, and co-morbidities.
- Additionally, the share of dual patients discharged by a hospital is a significant predictor of an individual's chance of readmission, independently of his or her dual status.
- Hospitals with higher shares of dual eligibles are disproportionately penalized under the HRRP.
- Of hospitals in the highest quartile of dual shares, over half had negative total profit margins in FY 2008 and FY 2009, compared with only 20% in the lowest quartile.

AAMC

Projected Payment Reductions Under HRRP

Projections are for FY 2015 with 3% cap in payment reductions and using 7 conditions under the Hospital Readmission Reduction Program (HRRP).

Based Payment Reductions	Lowest Quartile in Duals Share of Discharges	Highest Quartile in Duals Share of Discharges
No Reduction	23.1%	10.4%
0-1% Reduction	57.4%	58%
1-2% Reduction	13.8%	21.1%
2-3% Reduction	5.7%	10.5%

Source: Gu et al. The Medicare Hospital Readmissions Reduction Program: Potential Unintended Consequences for Hospitals Serving Vulnerable Populations. Forthcoming in *Health Services Research*
Note: The lowest quartile averaged 14% dual-eligible patients and the highest quartile 55%.

AAMC

Adjusting for Dual-Eligible Status Closes Readmission Performance Gap between Low- and High-Dual Hospitals

Percent of Hospitals with Excessive Readmission Rates under Alternative Risk-Adjustment Approaches

Risk Adjustment Method	AMI		Pneumonia		Heart Failure	
	Hospitals in Lowest Quartile	Hospitals in Highest Quartile	Hospitals in Lowest Quartile	Hospitals in Highest Quartile	Hospitals in Lowest Quartile	Hospitals in Highest Quartile
No dual-eligible adjustment	40%	64%	40%	59%	41%	61%
Individual dual-eligible adjustment	43%	58%	43%	55%	43%	57%
Individual dual-eligible adjustment + duals as share of hospital discharges	45%	51%	47%	51%	49%	50%

Source: Gu et al. The Medicare Hospital Readmissions Reduction Program: Potential Unintended Consequences for Hospitals Serving Vulnerable Populations. Forthcoming in *Health Services Research*

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Learn

Serve

Lead

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What SES Factors can be Derived from Census Tract Data and What is the Impact on Outcome Performance (Readmission)?

Census Tract Data & SES Factors

- Based on:
  - Decennial U.S. Census data
  - Intercensal data, e.g. American Community Survey

- Examples of available variables by domain:
  - Income (median income)
  - Poverty (% of families below federal poverty line)
  - Education (% of population with <high school education)
  - Employment (unemployment rate)
  - Housing (housing unit vacancy rate)

Census Tract Data & SES Factors

- Advantages
  - Readily available to hospitals
  - Contains factors typically not present in hospital administrative data

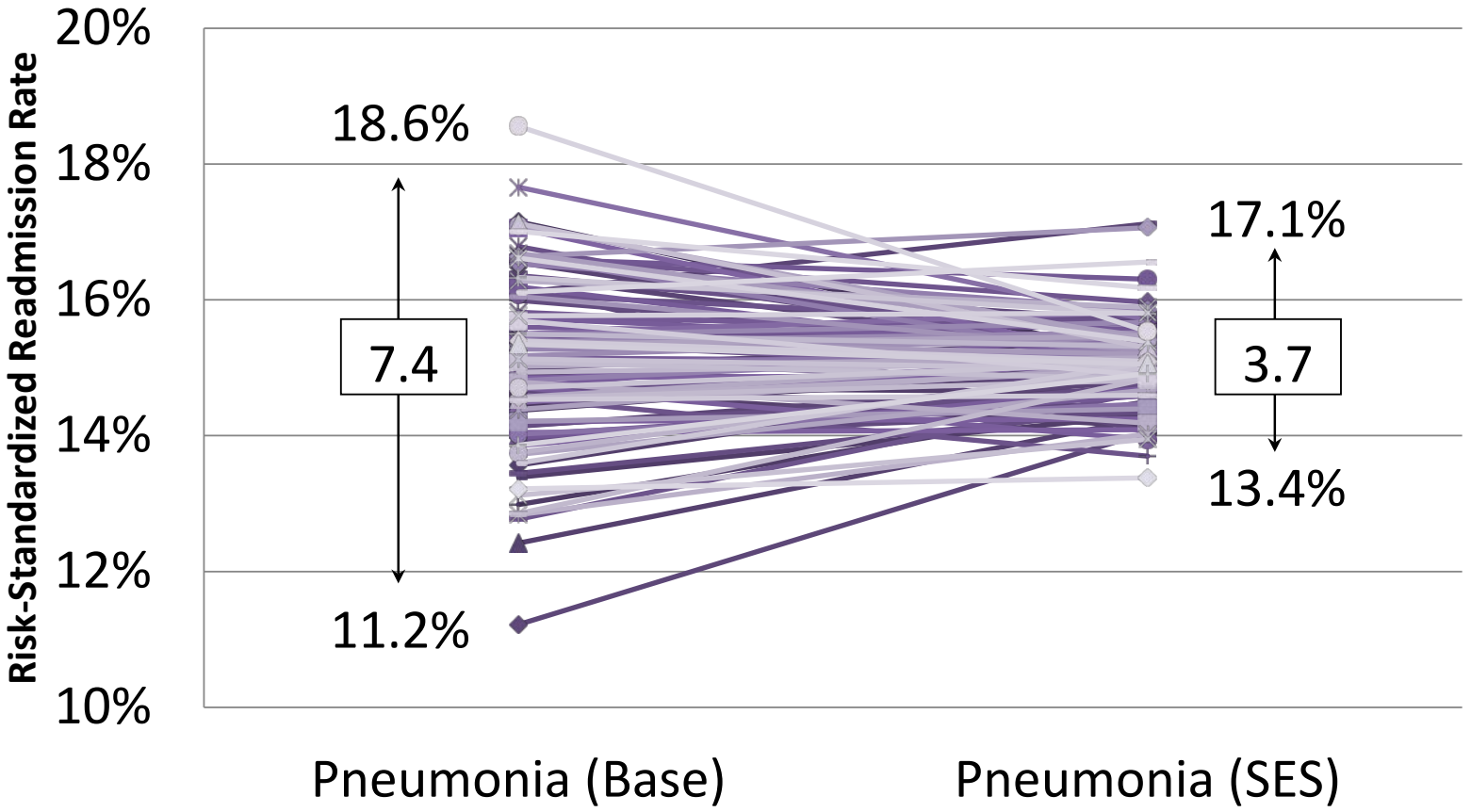
- Limitations
  - Can reflect both individual and neighborhood effects
  - Does not capture all of the social factors that may be related to outcomes of interest, e.g. health literacy, medication adherence

Statewide Analysis of 2009-2012 Medicare Fee-For-Service Discharges for AMI, HF, Pneumonia

- Objective: To compare 30-day all-cause hospital readmission rates using:
  - replicated CMS models alone
  - replicated CMS models w/census tract SES variables

- Data sources:
  - patient-level data from Missouri Hospital Association Hospital Industry Data Institute hospital discharge datasets
  - census tract variables from 2011 Truven Health Analytics and Nielsen Pop-Facts data

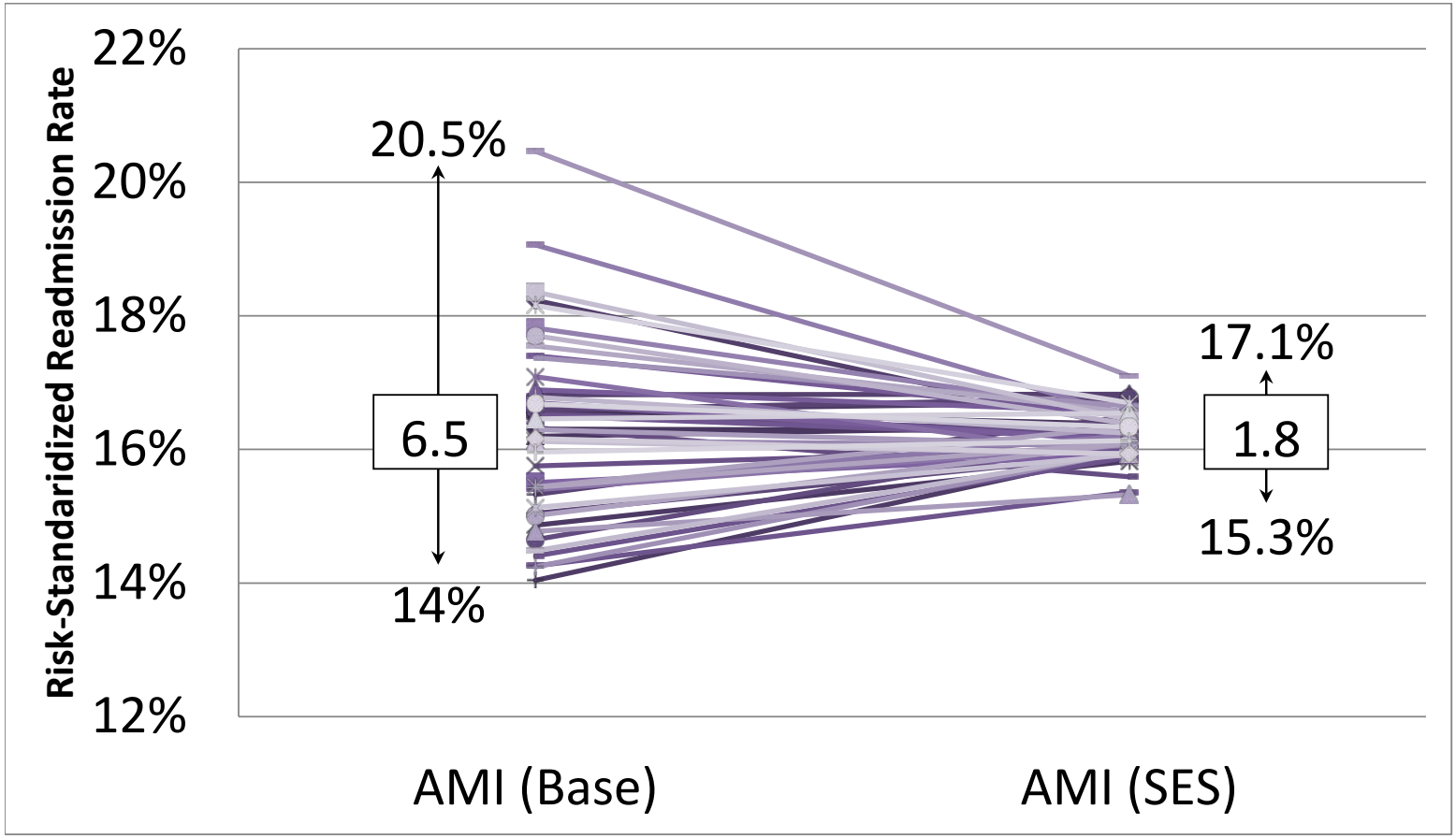
Inclusion of Census Tract SES Factors Changed Calculated Hospital Risk-Standardized Readmission Rates-PN



- Adding census tract SES to the model for pneumonia reduced the range in hospital rates by 50%.

Unpublished data, manuscript in review (not for distribution).

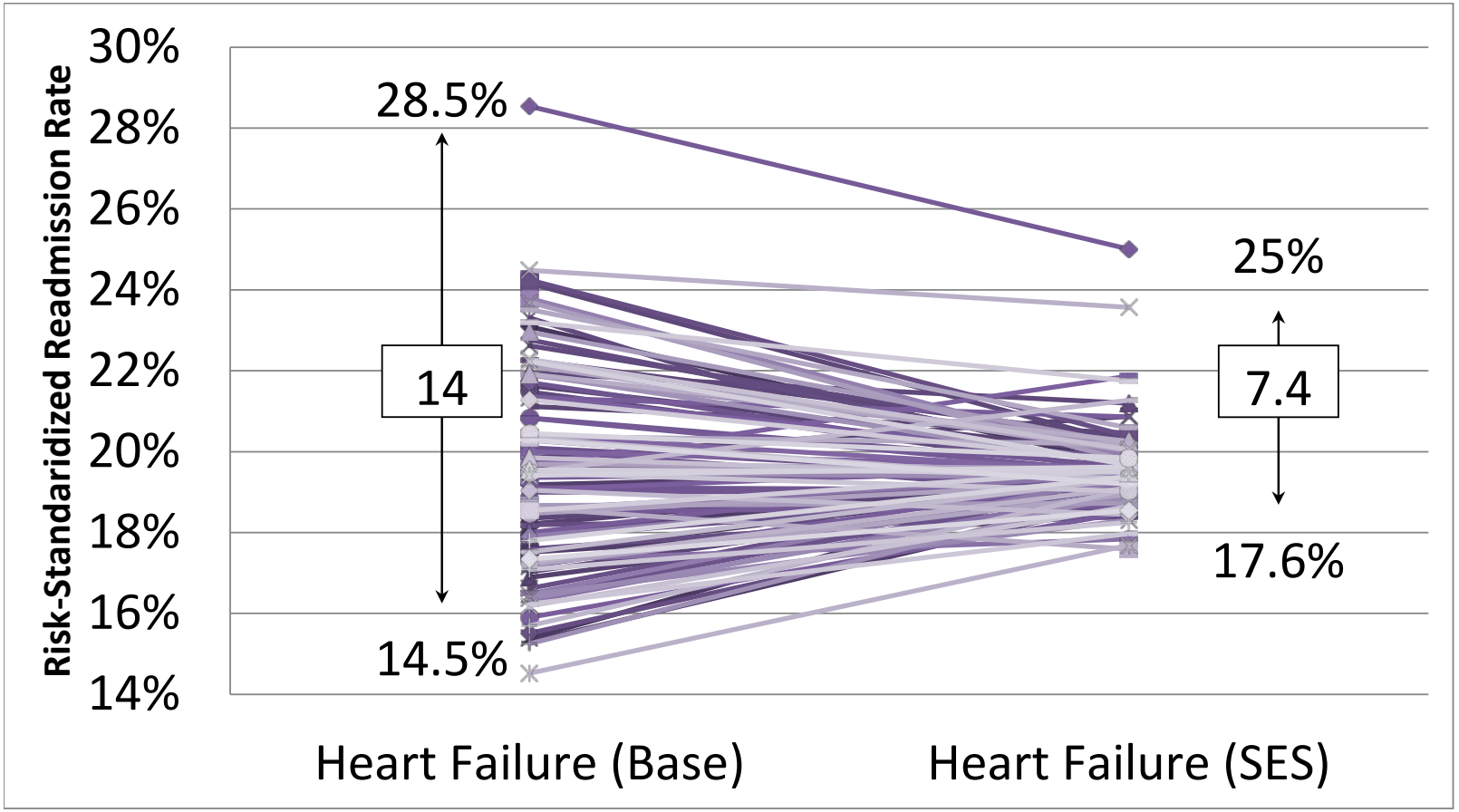
Inclusion of Census Tract SES Factors Changed Calculated Hospital Risk-Standardized Readmission Rates-AMI



- Adding census tract SES to the model for acute myocardial infarction reduced the range in hospital rates by 72%.

Unpublished data, manuscript in review (not for distribution).

Inclusion of Census Tract SES Factors Changed Calculated Hospital Risk-Standardized Readmission Rates-HF



- Adding census tract SES to the model for heart failure reduced the range in hospital rates by 47%.

Unpublished data, manuscript in review (not for distribution).

What is the effect of including both patient-level and provider-level variables on the quality of the risk adjustment model?

Eugene J. Nuccio, PhD Assistant Professor
Division of Health Care Policy and Research, Department of Medicine
University of Colorado, Anschutz Medical Campus

Colleagues: Stacey J. Elder, David F. Hittle, and Sung Joon Min (UC AMC)

Funding sources:

•Centers for Medicare & Medicaid Services, "Outcome and Assessment Information Set (OASIS) Quality Measure Development and Maintenance," Contract No. HHSM-500-2008-00019I/HHSM-500-T0001, Modification No. 000002.

•Medicare Payment Advisory Commission, "Updating the hospitalization measure to use data from OASIS-C," Contract No. RFQ MEDPAC-10-Q-0001.

Background

CMS-sponsored “Compare” Web sites:

- Nursing Home Compare (2002)
- Home Health Compare (HHC) (August 2003)
- Hospital Compare (2005)

Risk-adjusted home health agency (HHA) rates based on12-month rolling observation period

Risk adjustment:

- Two-part process: prediction model & application of model result
- HHC application of predicted value to adjust observed performance:
  - HHA risk adjusted = HHA observed + National predicted – HHA predicted
- Prediction model:
  - Patient-level outcome predicted by patient clinical characteristics taken from Outcome and Assessment Information Set (OASIS) instrument using random sample of 1M episodes of care and validated against a different set of 1M episodes of care
  - Approximately 12,000 HHA produced more than 5M episodes of care annually

Experimental outcome:

- Claims-based, OASIS-adjusted Acute Care Hospitalization w/in 30-days of HHA End-of-Care (note: this is different from the claims-based measure currently reported on HHC)

Acute Care Hospitalization Within 30 Days: Full and Parsimonious Models Comparing Patient-Level Clinical Risk Factors Only with Provider-Level Risk Factors

Table 1: Full Models

Full Model Name	# RFs	% Concordant	Somers' D	Gamma	Tau-a	c
Patient Level only (PLO)	113	69.8	0.400	0.401	0.160	0.700
PLO + Provider Process (PP)	117	69.9	0.402	0.404	0.161	0.701
PLO + PP + Provider Stratified Length of Stay (LOS)	123	72.4	0.450	0.452	0.180	0.725
PLO + PP + Race	121	70.0	0.404	0.406	0.162	0.702
PLO + PP + Dual Eligible (Dual)	119	70.0	0.403	0.405	0.161	0.702
PLO + Provider Mean LOS (LOS_Mean)	109	70.0	0.404	0.405	0.162	0.702

Table 2: Mini (Parsimonious) Models

Final Mini-Models	# RFs	% Concordant	Somers' D	Gamma	Tau-a	c	% of c-stat
Patient Level only (PLO)	22	68.7	0.379	0.381	0.152	0.690	98.6%
PLO + Race	25	68.8	0.382	0.383	0.153	0.691	98.4%
PLO + Dual	26	69.0	0.384	0.386	0.154	0.692	98.6%
PLO + LOS_Mean	23	69.0	0.384	0.386	0.154	0.692	98.6%

Acute Care Hospitalization Within 30 Days: Patient-Level Clinical Risk Factors in Parsimonious Model

Parsimonious Patient Level Only Model		95% Wald	
Risk Factor*	Odds Ratio	LL	UL
M1032 Multiple Prior Hospitalizations	1.58	1.57	1.59
Acute Breathing Problems	1.36	1.35	1.37
HHA Care for Joint Replacement	0.44	0.43	0.45
M1034 Likely to remain fragile	1.37	1.36	1.37
M0110 Later Payment Episode	1.68	1.66	1.70
HSPDx Acute Orthopedic	0.79	0.78	0.79
Chronic Mobility Problem	1.24	1.23	1.25
M1034 Serious progressive condition	1.40	1.38	1.42
M1000 No inpatient discharge	0.75	0.74	0.75
HCDx Skin problems	1.48	1.46	1.49
M1020 Primary condition rated serious	1.20	1.19	1.21
HCDx Genitour issue	1.32	1.31	1.33
HCDx Neoplasm issue	1.41	1.39	1.42
Chronic Medication Administration	1.20	1.19	1.20
M1400 Dyspneic walking 20+ feet	1.08	1.07	1.09
M1400 Dyspneic walking <20 feet	1.24	1.23	1.25
M1400 Dyspneic with minimal effort	1.48	1.47	1.50
M1400 Dyspneic at rest	1.60	1.57	1.62
* All Risk Factors p < 0.0001, ordered by Chi-square value (not shown)			

Thoughts on Patient- vs. Provider-Level Risk Factors, including Demographic Variables

- Adding Provider-level risk factors, even demographic variables such as race and Medicare/Medicaid dual eligible status, to patient-level risk factors contributes little predictive power to either full or parsimonious prediction models
- Effect of introducing Provider-level risk factors first in prediction model development, then adding patient-level risk factors was not tested
- Provider-level risk factor length of stay (quartile grouping—shown) and dual eligible (quartile grouping as curvilinear variable—not shown) produced the greatest changes in predictive power of the models
- Parsimonious models had predictive power that was virtually identical to full models
- How predictive model results are applied to adjust Provider observed values (e.g., use regional or state predicted value rather than national predicted value or use ratio of Provider_predicted-to-Reference_predicted as multiplier to adjust Provider observed value) were tested, but not presented here.

Geocoded Socioeconomic (SE) Information
A Tale of Two Studies

Alyna T. Chien, MD, MS
Department of Pediatrics, Harvard Medical School
Division of General Pediatrics, Boston Children's Hospital

January 15-16, 2014
National Quality Forum
Risk Adjustment and Socioeconomic Status Expert Panel

PAYMENT

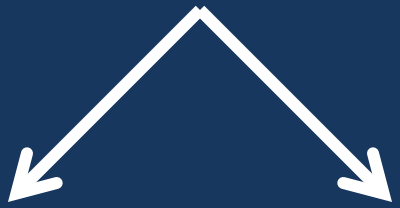
Do physician organizations located in lower socioeconomic status areas score lower on pay-for-performance measures? J Gen Intern Med. 2012;27(5):548-54.

SPENDING

Using Geocoded Socioeconomic Data to Enhance Pediatric Risk Adjustment Methods NICHD R21HD076442-01

SAME/SIMILAR GEOCODED CENSUS TRACT SE INFORMATION

2 DIFFERENT APPLICATIONS



PAYMENT

<u>Practice Location</u>
Practice Resources
Patient Population

SPENDING

<u>Patient Address</u>
Clinical/public health risk

PAYMENT

Physician organizations located in lower socioeconomic status areas score lower on pay-for-performance measures

SPENDING

Geocoded Socioeconomic May Explain Pediatric Spending Variation

To Adjust or Not Adjust

PAYMENT

Adjust vs Stratify
Depends on Program Design

SPENDING

Adjust

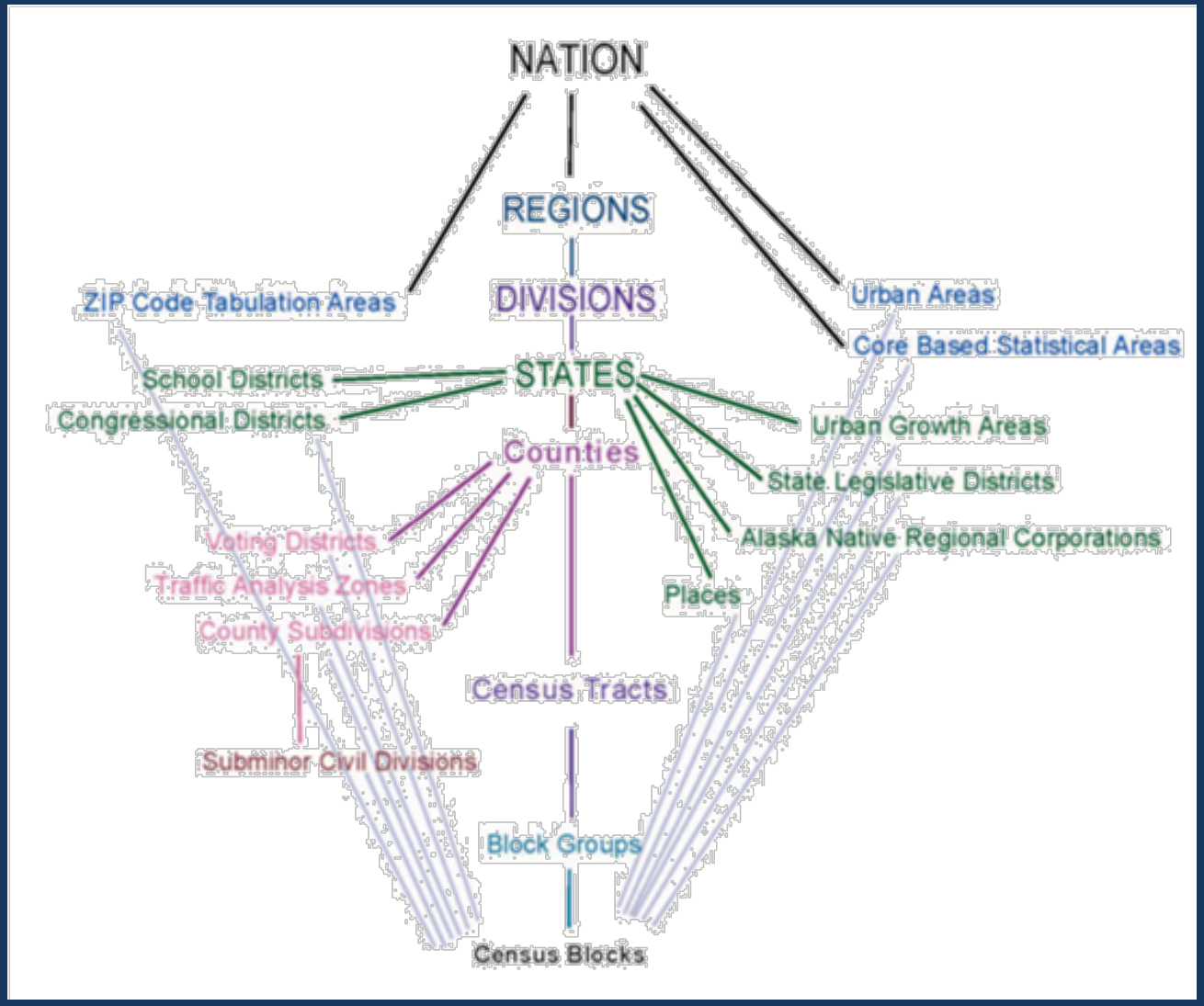
CENSUS TRACT SE INFORMATION
What is it?

- median household income
- % of homes worth >400% the median home value

% of persons:

- employed in working class occupations
- unemployed
- living below the federal poverty line
- with ≥4 years of college education
- with <12th grade education; *% of households with:*
- income <50% of the median household income
- income >400% of the median household income
- >1 person per room.

SIZE OF GEOCODED AREA



Expert Panel Discussions
January 15, 2014

NATIONAL QUALITY FORUM

Disparities in Health and Healthcare Related to Sociodemographic Factors:

Considerations for ***whether sociodemographic factors should be accounted for in outcome performance measurement***

1:40-2:40 pm

Given the relationship between sociodemographic factors and health status or various patient outcomes:

To what extent do clinical/health status patient factors (e.g., co-morbidity, health status, severity) account for the effect of the sociodemographic patient variables (e.g., SES, race) on outcomes?

- What are the relationships (redundancy) between and among SES, race/ethnicity, or other sociodemographic factors and the clinical and health status factors that are already captured in many risk models?
- If age, clinical factors, and health status are in a model, does adding SES explain additional variation in the outcome?
- Do demographic factors of age, sex, and race represent biologic or physiologic differences (potentially reflecting cumulative or interactive effects) that directly affect clinical condition and health status? Do provider (e.g., average income of patients served) or community sociodemographic (e.g., average income of population) factors have a similar effect?
- Do provider or community sociodemographic factors have a similar effect?

To what extent are sociodemographic factors related to/correlated with quality of care?

- Are the distributions of scores on risk-adjusted performance measures (without sociodemographic factors) significantly different for providers serving disadvantaged, average, and advantaged populations?
- Can practices/ interventions moderate or mitigate the influence of sociodemographic factors on outcomes? (e.g., providing instructions in different languages, interpreters; prescribing generic vs. higher-cost brand name drugs; case managers/care navigators; post-hospital follow-up clinics)
- Can the mitigation strategies be done without additional resources? Are healthcare providers responsible for adjusting care practices based on sociodemographic factors?

- What are the pros and cons of accounting for sociodemographic factors in outcome performance measurement? For example:
  - PRO – minimize adverse selection & worsening of disparities
  - CON – masking poor care due to bias or inadequate resources relative to need
- If payment for services is increased to account for the higher cost of caring for patients with certain sociodemographic factors, should equal outcomes be expected?
- Are there differences based on type of outcome or use of the performance measure? If so, rationale.

Methodological Considerations: Considerations for how sociodemographic risk factors should be selected?

2:40 -3:15pm

Usual Considerations for Selecting Risk Factors

- Clinical/conceptual relationship with the outcome of interest
- Empirical association with the outcome of interest
- Contribution of unique variation (i.e., not redundant or highly correlated with another risk factor)
- Not related to the quality of care (e.g., treatments, expertise of staff)
  - Present at the start of care
- Accurate data that can be reliably captured – data limitations often represent a practical constraint
- Improvement in risk model metrics (e.g., discrimination, calibration) and sustained with cross-validation

Are there any unique considerations for selecting sociodemographic risk factors?

- When should race be considered? If race is associated with outcomes (independent of measured SES), then what should be done? Does identifying the disparities-sensitive performance measures (essentially calling for stratification) address this issue?
- What standardized sociodemographic data are available for use now, in the future?
- When should provider or community-level factors be considered?
- Are there differences based on type of outcome or use of the performance measure? If so, rationale.

Methodological Considerations: Considerations for how sociodemographic factors should be accounted for in outcome performance measurement?

3:30 -4:30pm

Methods for Risk Adjustment

- Comparison of observed to expected outcomes for the accountable entity
  - Indirect standardization where the expected number of outcomes are determined by applying stratum-specific rates determined from all patients to the number of cases in each stratum for each provider
  - Extension to multivariable statistical models

Statistical Models for Risk Adjustment vs. Explanatory Models

- Models for risk adjustment are used to isolate the effect of quality of care and
  - purposely do not include variables related to the care provided (e.g., alternative treatments, experience of surgeon, complications that develop)
- Explanatory models are intended to explain the contribution of all variables that influence the outcome, including the care provided
- Model metrics (e.g., R-squared, C-statistic) for risk models will not necessarily achieve the same values as explanatory models that also include variables about the care provided (*unless the care variables do not explain additional variation in the outcome*)

Stratification

- Stratification of outcome results for patients in different risk categories within each accountable entity.
  - Risk categories could be constructed based on SES and/or other sociodemographic variables.
- Organizational stratification - stratify organizations by the proportion of their patients with certain characteristics such as SES (e.g., MedPAC recommendation)
- Combination of statistical risk model and stratification
  - Risk adjust for health status/clinical factors and stratify on sociodemographic factors
- Other?

Stratification within Accountable Entity

Percentage of patients who experience an outcome

National rate: 70%

Organization A Performance:

Crude rate: 75%

Adjusted rate: 70%

Number of cases: 300

Adjusted Rate for Patients Stratified by SES (Quintile of median income by census tract)

1st	60 cases	85%
2nd	60 cases	70%
3rd	60cases	65%
4th	60 cases	60%
5tth	60 cases	45%

Organizational Stratification

Percentage of patients who experience an outcome

National rate: 70%

Number of organizations: 3,000

Avg. Adjusted Rate for Organizations Stratified by SES (Quintile of median income by census tract- high to low)

1st	600 organizations	85%
2nd	600 organizations	70%
3rd	600 organizations	65%
4th	600 organizations	60%
5th	600 organizations	45%

Organization A Performance:

Quintile for patient median income: 3rd - 65%

Crude rate: 75%

Number of cases: 300

- What are the pros and cons of various methods (e.g., stratification within providers, statistical risk model, stratification for peer groups)
- When should various methods be employed?
- Are there differences based on type of outcome or use of the performance measure? If so, rationale.

PROs/CONs of Approaches for Including Sociodemographic Factors

	PROs	CONs	Unique Considerations
Statistical			
Stratification within organ.			
Organ. stratification			

Summarize and Prepare for Recommendations

4:30-5:15 pm

Summarize Key Themes

- Whether sociodemographic factors should be accounted for in outcome performance measurement
- How sociodemographic factors should be selected
- How sociodemographic factors should be accounted for in outcome performance measurement
- Are there differences based on type of outcome or use of the performance measure? If so, rationale.

Key Themes - Whether sociodemographic factors should be accounted for in outcome performance measurement

Key Themes - How sociodemographic factors should be selected

Key Themes - How sociodemographic factors should be accounted for in outcome performance measurement

Key Themes - Are there differences based on type of outcome or use of the performance measure? If so, rationale.

Public Comment

Day 2 will begin at 8:30am